

COMPUTER WORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper-Second-class postage paid at Boston, Mass.

Vol. III No. 21

May 28, 1969

Price: \$9/year

16,000 More Than Expected

4,600 Attend Spring Computer Conference

BOSTON Some 41,000 people crashed into town for the Spring Joint Computer Conference, about 16,000 more than expected. The result was chaos for both the conference and the city.

Traffic backed up, parking space was unobtainable, reservations for hotel rooms and rental cars weren't honored.

A company president, whose hotel reservation wasn't honored, wandered around a hotel in the middle of the night until someone finally offered him a couch to sleep on.

A Boston crowd had to make arrangements to put up a jury overnight in Fall River, 49 miles away, because no nearer accommodations could be found.

Officials of the American Federation of Information Processing Societies said they would never hold another conference in Boston unless conditions changed. And the *Boston Globe* warned that the city would never again get a major convention.

A record 170 companies exhibited on the two floors of the War Memorial Auditorium and an unknown number of other companies, perhaps more than 50, were forced to exhibit in hotel rooms and any other places they could find.

Some 11,000 people registered for the conference technical sessions, 18,000 people visited the show as guests of exhibitors, and

4,000 people paid to walk in off the street. Students, other guests, and the press made up the remaining 8,000.

Afps officials, who released the figures, said they were accurate within 1%.

Afps Elections

At its annual meeting, Afps elected Dr. Richard T. Tanaka as president, Keith W. Uinkapner as vice-president, Richard C. Canning as secretary, and reelected Walter Hoffman as treasurer.

A Joint Computer Conference Board was established to control policy for the Spring and Fall Joint Computer Conferences. Afps also formed a conference committee to evaluate and recommend additional conferences to meet the needs of its constituent societies.

"The new arrangement and procedures, according to Paul Arner, outgoing president, 'will help streamline organization and operation of joint computer conferences and make possible increased assistance to the volunteer chairman for each JCC. It also means that major emphasis of the conferences remains in the areas of hardware and software development and applications tied directly to such developments. It will also provide the Afps Board of Directors with increased time to devote to the many important issues facing the information processing profession.'"



People jam the Honeywell 4200 system exhibit, top, and the conference keynote session.

ACM Drops Seminars As \$ Crisis Worsens

BOSTON—The ACM Council, with only \$7,500 in the bank beyond the \$75,000 allocated for the move to the new headquarters building, cancelled its professional development program and cut eight people from the headquarters staff during its meeting at the Spring Joint Computer Conference.

It also adopted a set of guidelines for the certification of data processing schools, and investigated the cost of enforcing industry ethics.

The problem of the potential reform of the Special Interest Committee on the Social Implications of Computing was discussed at length and was referred to a committee headed by Paul Arner.

In its financial statement, the Council indicated a net operating loss of \$165,000 for this year.

When asked about the additional deficit that could have been expected if the council hadn't taken emergency actions at the February meeting, the treasurer told the council the amount would have run about an additional \$125,000.

Income for this year was \$1,574,000 and expenses were \$1,739,000, showing a net deficit of \$165,000 for the year.

The Professional Development

Seminar program returned only about \$10,000, barely enough to cover expenses, according to the report.

Through the annual budget for fiscal 1970 was one of the more important activities planned for the meeting, the discussion was postponed to continue on June 3 in Chicago.

The greatest controversy over budget allocations fell in the area of publications. It appears that to maintain, or even approach, the \$225,000 profit requested by the council in February, it will be necessary to cut the publishing budget for certain publications, particularly *Computing Reviews*.

It has been proposed that *Computing Reviews* be issued on a bimonthly, rather than monthly, basis and that the total pages printed be cut in half. One of the council members suggested that, rather than decrease the usefulness of such a publication, it should be discontinued.

The guidelines for accreditation of data processing schools were intended to complement those proposed by the Data Processing Management Association. The ACM guidelines relate to academic qualifications, course selection and criteria, and accessibility of computers, as well as professional requirements for teachers.

Officials Rally to Defend OCR-B

Senior officials of both the American and Canadian governments have rallied to the defense of OCR-B, recently ruled unsuitable for standardization by X3 of the USA Standards Institute.

Dr. Herbert Grosch of the National Bureau of Standards declared: "I realize that many people may oppose what I am saying, but I still feel that the only reasonable solution for any long-term results must incorporate the human element." He strongly favors the adoption of OCR-B on these grounds.

Dr. Grosch's opposite number in Canada, Arthur Dunn, manager of the Department of Standards and Materials, also took a people-oriented point of view. OCR-B is advocated as being more easily read than optical disk Dunn: "In the current dialog over the use of OCR-A versus OCR-B, I find myself constantly thinking of the human problems which computers have created."

"Should we adopt a standard

for OCR-B which further feeds the fires of resentment shown by the student attack at the University in Montreal, we are certainly asking for trouble. Anything in which we engage has social implications, and it is foolish to think otherwise. We are a bilingual country, and these problems are most difficult for us to cope with."

"We cannot permit the fur-

therance of the viewpoint that people's needs are not significant. I do not argue that the OCR-A font may not be more readable. I do, however, point out that there is very little excuse for permitting the saving of a few thousand dollars in the near future to cost us much more over the next few years in human resentment and lack of interest."

Move to Revitalize SicSic Advances Despite Friction

By Joseph Hanlon
CW Staff Writer

BOSTON—SicSic is not dead, but neither is it really alive yet. At its May 17 meeting, the ACM Council refused to reestablish the dissolved Special Interest Committee on the Social Implications of Computing. But it did set wheels in motion to establish a new special interest committee in this area.

Discussion by the ACM Council was in response to a petition

calling for a new group on social implications, as well as a meeting held during the Spring Joint Computer Conference of people interested in such a group. That meeting, which attracted over 100 people, ended with a call for the ACM Council to reestablish SicSic. The meeting also approved, in "sense of the meeting," resolutions, statements against the war in Vietnam, discrimination in the computer

field, and mass data banks. The meeting also called for accrediting standards for computer schools.

ACM President Bernard Galler, several ACM Council members, and Jean Sammet, chairman of the ACM Committee on Special Interest Committees and Groups, were at the meeting, although they did not vote on any of the proposals. They were clearly unhappy with the Viet-

nam resolution and with the fact that members of the Computer Professionals for Peace organizations were active in the attempt to reestablish SicSic.

At its meeting, the ACM Council considered separately the petition to form a new group and the proposal to reestablish SicSic. There is a considerable overlap between the supporters of the two proposals, however,

(Continued on Page 7)



RESISTOR AT WORK: EJ Glazer of Digital Equipment Corp. is a fascinated spectator as AJ Thomas uses a time-sharing terminal at Digital's SJCC booth to get all the powers of 2 up to the 100th. The youth is a member of the Resistors, a student group which has earned quite a reputation for its work in the computer field.

Peace Group Heckles Speakers At SJCC Session

BOSTON—Speakers in the SJCC session "URGENT—Increased Dialog With Society" were repeatedly heckled and interrupted by members of the Computer Professionals for Peace and others. The hecklers charged that the panel had ignored the word "urgent" in the session title and was dealing in generalities.

Panelist T.G. Peterson argued that fears of computers by the public are "irrational" and that the real problem is to allay those fears. On the other hand, panelist Hal Sackman warned, "We are creating a computer juggernaut." He said that scientists are the first ones to see the implications of their work, so it is up to the computer scientists to provide "an early warning system for the rest of society." Finally, he urged computer professionals to "demand positive social fallout from your job."

Panelist Milton A. Lipton declared, "We must engineer society's interest into our designs." James M. Brownlaw charged, "We have neglected our duty to be socially creative."

Computers themselves can be used to implement the dialog, according to A.J. Pennington. He urged "role playing and computer games" as a help in getting people to talk to each other.

There were few proposals made for specific action, and the disruptions and charges of irrelevance drew support from a large minority of the audience.

Dr. Herbert Groch told the panel, "You people up there could be the dean and six professors at Columbia two years ago. I never saw a less relevant discussion." In support of the hecklers, he said, "If you honestly want involvement with society, you must realize that society is fed up. And you have to let these people come and tell it to you." He concluded by describing the session as "crap."

Not everyone in the audience supported the heckling. At one point, a man in the audience got up and castigated the hecklers, concluding that they were "bloody impolite." This comment drew loud applause.

Linnell Wasn't Defendant In SEC Case Against MMI

James Linnell, former president of Linnell Electronics, Inc., has called to *Computerworld's* attention certain inaccuracies in last week's article entitled "SEC Gets an Injunction Against Linnell." Linnell, now president of Peripherals General, Inc., pointed out (and *Computerworld's* review of the SEC press release confirms) that:

- The SEC's injunction was against Memory Magnetics International and not against Linnell Electronics, Inc., its subsidiary.
- The marketing agreement was for the sale of MMI products, not just the Linnell disk drives, and according to the SEC, the MMI press release included a false statement that Linnell could produce in mass quantities in accordance with the terms of the agreement.

- The financial statement represented to be certified was that of MMI and not of Linnell Electronics.

The SEC complaint was filed April 28, 1969. As noted in *Computerworld* on April 2, Linnell, Laurence J. Brownsey, and Myron Greenberg, who also were officers of LEI, had resigned some time before.

An SEC spokesman told *Computerworld* that these individuals were not parties to the injunction against MMI and the other defendants. The SEC spokesman also confirmed that the marketing agreement had been signed by officers of Memory Magnetics International and not by officers of Linnell Electronics.

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...And Then There Was the Other Computer Show

By V.J. Farmer
Circuit writer
BOSTON — The Spring Joint Computer Conference had its own "off-Broadway" shows,

consisting of make-shift exhibits by companies refused space in the exhibition hall for many reasons, mostly classified by Afips as "lack of space."



Barry Dent demonstrates the Sadger data terminal system DTS-112 to Lester M. Sachs of Computer Programming Associates, Inc.



William Gray and Matthew R. Smith of Brandon Applied Systems, Inc. answer questions on their software at a presentation held at the Sheraton Plaza.



Computer Synectics' President Dudley Warner explains his new system utilization monitor SM-416 at the Sheraton Boston.



COMPUTERWORLD
THE JOURNAL FOR THE COMPUTER COMMUNITY

7th Reg. U.S. Pat. Off.
Weekly Newspaper — Second Class Postage Paid at Boston, Mass.
Published every Wednesday by COMPUTERWORLD, Inc., 60 Austin St., Newton, Mass. 02160. Telephone: (617) 332-5606 & TWX: 710-335-6635. Copyright 1969 by COMPUTERWORLD, Inc.
Alan Taylor, Editor, Robert M. Patterson, News Editor, Neal Wilder, National Sales Manager, Margaret Phelan, Circulation Manager, Henry Fling, Art Services Supervisor, Kara Reachtain, Typesetting Services Supervisor.

Patrick J. McQuinn, Publisher, W. Walter Boyd, Associate Publisher
Subscription rates are: \$9 for one year, \$16 for two years. Add \$1 per year for Canada; \$3.50 per year for Foreign. Please send all editorial and subscription material to COMPUTERWORLD, 60 Austin St., Newton, Mass. 02160. (617) 332-5606.

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BPA Membership Applied For

"Off-Broadway" shows were not limited to young and small companies. Among the 35 or 40 such firms were Burroughs, General Dynamics, and Kybe Corp. Burroughs and Kybe had participated in previous joint conferences.

William Conlin, manager of large-systems sales development at Burroughs, said that complications in applying to Afips, and the ultimate assigning of a 10 ft by 10 ft space, forced Burroughs out of the exhibition.

Burroughs Hurt

"In comparison to the last conference, where we picked up a large number of good sales leads, this conference has definitely hurt us," he said. Burroughs used a combination of free continental breakfasts and an information suite on the tenth floor of the Sheraton-Boston to keep in the running.

The suite, stressed by Burroughs people as not a "hospitality suite," had no Burroughs equipment. But it did have a terminal connected to a remote B5500 and a movie on the B5500.

Conlin stressed that the information suite was no substitute for a large-scale equipment display, but could be a good complement to such a display in the future.

The contrast in size allocations between a 10 ft by 10 ft area for Burroughs and 50 ft by 50 ft areas for its major competitors also irked the Burroughs manager.

Not Mainstream

Paul E. Garland, sales manager at Kybe Corp., said that Afips had told him that although Kybe had been in every previous joint conference for the last five years, his company was no longer "in the mainstream of interest" to the conference goers.

Kybe had a good "off-Broadway" location for showing its tape and disk pack cleaners, on the first floor of the Sheraton-Plaza about three blocks away from the conference.

Some of the benefits of the "off-Broadway" approach cited by Garland included: The people that show up are really interested, the availability of refreshments in the parlor room provided a relaxed atmosphere, and exposure to "paper-pickers," nonbuyers, and sight-seeing students was minimal.

The vice-president of Quadri Corp., Donald McNabb, said that he was "tired of being turned down by Afips and won't try again." In his opinion, the suite gave Quadri better exposure to the people "we want to see and who want to see us."

Ray Arrude, vice-president of marketing for Ty-Cor, summed up the underlying need to be on the conference floor when he said, "You show because everyone else shows — and we want the same broad exposure everyone else gets."

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Paul Garland and Philip Bryant of Kybe Corp. load a disk pack into the new Kybe disk pack cleaner. (CW Photos by Farmer)



Ray Arrude demonstrates to Nora O'Neill how to load a tape cartridge into Ty-Cor's new terminal.



Frank Fleming checks the results as Tempo Computers, Inc.'s president, J. Edward McAtee sets the controls on his Tempo I computer at the Sheraton Plaza.



Engineers Bill Riske and Fritz Schaefer check a printout in the Dynatronics suite at the Sheraton Plaza.

SIG, SIC Groups Asked to Review Standards Work

BOSTON — The position of the ACM special interest committees and groups got a boost this week when the ACM Standards Committee chairman decided to ask them to watchdog the various standards activities.

The chairman, J.A.N. Lee, head of the Computer Sciences Department at the University of Massachusetts at Amherst, told CW that this would give real technical capability to the operation. The new committees will function in addition to the USASI contact committee, which will continue in operation.

Interested observers said that the new role has a potential for making the ACM really influential in standards for the first time.

Could Computer Create Triangle In A Marriage?

By Patricia Coffey
CW Staff Writer

BOSTON — Would you believe a terminal could be cited in a divorce suit?

A woman in the computer industry probably has the first divorce on record in which a terminal was actually named co-defendant.

The computer field, she said, can take up too much of a husband's time.

However, most wives who accompanied their husbands to this year's SJCC here didn't believe their husbands could fall in love with a machine.

Mrs. Jack Porter, one of the organizers of the SJCC ladies' program, said she is accustomed to her husband being all wrapped up in computers. Her husband was involved in Project Whirlwind at MIT, one of the first computer efforts. "I've picked up the lingo, but I don't really know too much of what they're talking about," she said.

The main objection of Mrs. Robert Lynch of Monsey, N.Y., is travel. She said her husband travels every day. "He commutes from New York to Louisville," she said. "It was supposed to be a temporary assignment, but it has gone on for two years."

"My husband is teaching me Fortran," said Mrs. Reginald Crocchi of Toronto. Her husband got her a book on the language and answers her questions.

Mrs. Richard Foote of Garden City, N.Y., is delighted her husband is in the computer field. "It's so much more enlightening to have your husband come home and discuss the challenges of computers, rather than have his whole life revolve around golf or bridge. He's happy and interested in his job, and so am I."

None of the wives felt that her marriage was in jeopardy because her husband worked with computers. All seemed to take an unusual interest in their husbands' work because the field is fresh and fascinating.



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Move to Reestablish SicSic Advances, ACM Council Asks for Report in August

(Continued from Page 1)

and membership in either group would probably be the same. Attorney Robert P. Bigelow submitted the petition and was chairman of the meeting at the SJCC. Many signers of his petition also were at the meeting.

Jean Sammet Opposed

Jean Sammet spoke vehemently against both suggestions. She charged that any special interest committee in this area would be "uncontrollable" and that radical elements would take control from the committee chairman. She declared that the people who want to form this group have "no interest or willingness to comply with ACM policy." She noted that she was responsible for overseeing such committees and concluded, "I do not feel that I can accept the responsibility for seeing that these people follow ACM policy."

Regional Representative Samuel M. Matsa declared, "This is not only an interest of some radical faction." He charged that Miss Sammet was unfairly "judging the way the new group will go."

Member-at-Large Herbert

Grosch strongly supported the proposals. He declared: "This is not just a bunch of kids trying to capture ACM's name." He added that some action in this area is "vital." He charged that Miss Sammet represented "the clear voice of the establishment." Finally, he said that the ACM Council and the committee's chairman would have effective control, and that the more radical people "will not be able to take over the organization." Grosch moved that SicSic be reestablished. But after much discussion, the motion was defeated 7-1.

Next, the council considered the petition submitted by Bigelow to set up a new committee. A motion was proposed that the chairman of the committee on such groups (Jean Sammet) be "instructed" to "work with the sponsors of this petition" and bring to the August council meeting a working plan for a new special interest committee. She objected, reiterating her statement that, "I feel incapable of getting the committee to comply with ACM policy."

Despite her objections, the motion passed 17-4. As noted by ACM Vice President W.M. Carlson, the vote reflected the fact

that the council did "not accept Jean Sammet's recommendation." The feeling of many attending the meeting was that the vote indicated support for such a committee, and put the primary responsibility on Jean Sammet.

SicSic's Dissolution

SicSic was dissolved last year by ACM President Bernard Galler at the suggestion of Miss Sammet. She reported that she had been unable to contact the committee and assumed it was inactive.

Objections came from two areas. Nine ACM members, including council members Anthony Oettinger, Herbert Grosch, and Donn Furer, sent a letter to the *Communications of the ACM*. This letter was also published in *Computerworld* and elsewhere. It "deplored" Galler's action, called for the "reaction" of SicSic, and urged interested people to contact Bigelow. Many of those who later signed Bigelow's petition first contacted him in response to this letter.

In New York, SicSic Secretary Robert Shapiro said that SicSic was active and never should have been dissolved in the first place.



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Editorials

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They were met with quiet laughter, and some indignation.

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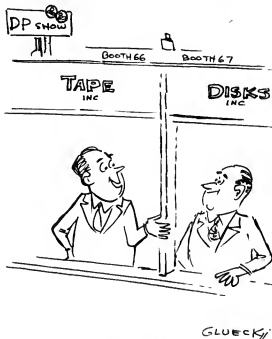
Congratulations are due to Bryant W. Cannon and all his committee. Many computer people could emulate them to advantage.

Half a Step Forward

The ACM Council took a positive step (or at least half a step) forward during its recent meeting. It referred the social implications question to a committee for action rather than simply ignoring it because all the formal requirements for the reestablishment of the group had not been completed. Earlier, council officials had also taken a step forward by attending, in one of the most powerful arrays of ACM and AFIPS leadership ever seen, the Wednesday evening meeting called to reestablish the committee.

This evidence of real interest was perhaps urged on them after they received reports about the chaos that had occurred earlier that day when obscurities were being flung from one side of the hall to the other.

CW welcomes the renewed interest of the ACM Council in this matter, and hopes that it has not come too late.



"Let's Merge..."

Spring Joint 1969



Letters to the Editor

Political Action Seen Hurting ACM

An issue of great importance to the ACM has been reported and editorialized in CW: "Should the ACM have a Special Interest (i.e., voluntary membership participation) Committee on the Social Implications of Computing?"

At its December meeting, the ACM Council did not take special action to extend the then-existing SigSic's one-year SIC status. This was decided due to lack of evidence that the required conversion to SIG was proceeding effectively, and because communications between the Association and the SigSic had broken down. Consequently, the then-existing SigSic's original one-year charter was allowed to expire. Thus, there has been no authorized ACM SigSic since December 1968.

Announcement of this decision, and comment in CW and other publications, was followed by dramatic evidence that there is a great deal of energetic interest on the part of both ACM members and nonmembers in the reactivation of an authorized ACM special interest activity in the area of social implications of computing.

The interest has had two evident motivations:
A. Concern for social responsibilities of the computing community with respect to computing-related issues.
B. Interest in political actions not necessarily related to computing.

There is presently being conducted an all-member referendum on "Shall the Constitution of the ACM be revised to permit Association comment or action on deeply political and social questions?" The due date for votes on this referendum is June 9 and the result will be known on June 10.

If the result of this referendum is a negative decision by the membership, then political action, as such, not only, but will remain outside the proper purposes of the ACM. If positive, then future decisions on constitution amendment may indeed change the nature of the association, from strictly technology-oriented to one in which political activity is an avowed purpose.

In the council's May 16-17 meeting, President Galler announced the appointment of an ACM National Committee on Computing and Society, chaired by Paul Armer. Also, the ACM Council rejected a motion to reestablish SigSic by council initiative. "...with the understanding that [it will be] social-implications oriented rather than political-action oriented..."

The council also acknowledged a 29-signature petition for activating a SigSic and committed it to the SigSic Committee with instructions to present a workable plan for a SigSic to the council at the August meeting.

As a long-time activist on ACM efforts toward present ACM purposes, I enthusiastically support thoughtfully constructive examination of, and actions on, com-

puting-related matters of social concern, such as computing training of disadvantaged persons, data banks and privacy, jobs and automation, and urban applications.

At the same time, I deplore the possibility that the ACM might be changed to a political-action organization. My reason is that I choose to separate my technical concerns from my political ones: I feel such a change would impose on me the political positions of others, and consequently would infringe on my personal freedoms of action and position.

I also believe that many others would feel likewise; they and I would withdraw from the ACM; and the association would change in character as well as in purpose.

I hope that the results of the ACM referendum and of the attempt to reactivate a SigSic retain the present purposes of the ACM and truly strengthen and broaden its public-service usefulness.

Herbert S. Bright
Member-at-Large
ACM Council

Computerworld welcomes comments from its readers. Preference will be given to letters of 250 words or less. Computerworld reserves the right to edit letters for purposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 60 Austin St., Newton, Mass. 02160.

PL/I Standardization -- Part 3

Preventing the Misuse of USA Standards

By Alan Taylor

Last week we pointed out that PL/I standardization was very desirable from the point of view of the user, but that the reasons users gave did not fit into the historical background of the USA Standards Institute. We did, however, state that we believed there were solutions. This week we will discuss them.

Perhaps if you attended the Spring Joint Computer Conference you noticed the lion and the unicorn that appear in all their heraldic glory on the old State House in Boston. They stand as a type of guarantee that a product, be it a building or a bottle, is a respectable and responsible one. And there lies the clue to standardizing PL/I.

They stand as a statement that the old State House is of at least 1700s standard quality. You can see similar statements on bottles of scotch, on teabags, and on many other items which have the right to bear the coat of arms of Queen Elizabeth II. This right is given when the queen uses the item consistently.

Some years ago, the people who received these appointments, as they are called, found that the right was being abused. Some people blazoned the royal arms on their carriages and silverware. Complaints arose. As a result, rules were made that said how the coat of arms had to be used. It had to be placed in an isolated part of advertisements. No reference to it was to be made in the text, and no "vulgar use" was allowed. The penalty was the withdrawal of the warrant. Phrasing was standardized to read "By Appointment."

Marmalade -- and Lots More

Later even these rules were found to be open to abuse. The manufacturers of orange marmalade, for instance, who were justly proud of obtaining the royal appointment, were somewhat put out when another firm also put out marmalade jars with the royal warrant on them even though that warrant hadn't been obtained for their marmalade.

The rules were altered to include a statement of what the standard was for. So now you see such statements as "By appointment to Her Majesty, the Queen, supplier of decorated candlesticks."

System Works

This appears to work. The marmalade people don't mind at all if someone puts a royal coat of arms on top of a marmalade jar, but has to state that his warrant is for making saddle soap or decorated candlesticks. It suggests that this is what is in the marmalade, which clearly is no great advertisement for it.

We believe that in the struggle to provide both economic value and proper dignity that has marked the history of the royal warranty there lies the solution to the standards problem that is currently hurting the USA Standards Institute.

We suggest the creation of a set of rules to define how a standard can be used in advertising, etc., and what the standard is for.

Some people, for instance, believe that PL/I is the only language capable of handling certain probes which are not handled by Cobol and Fortran. Very well, let them propose some wording that describes this virtue, such as PL/I should be standardized for "problems that cannot be handled by either Cobol or Fortran separately." Then there would be no worry about what is being standardized.

Similarly, there are those users who feel that the purpose of a standard is to control changes between successive implementations. In that case, PL/I could be

described as being a standard language "for IBM 360 users using PL/I."

Users would like to have assurance that changes in the language won't suddenly obsolete the programs they already have operational. If this is what they want, then here is a standardization technique that could allow them to be given just that -- without introducing other arguments.

We feel that it is the other arguments involved which have muddled the waters. PL/I has been marketed as a tool superior to Cobol and Fortran. This claim has been used as a reason why users should go to one manufacturer and, more to the point, as a reason to avoid going to others. No standard should be able to be abused in this manner. No chance of a standard for PL/I exists while this type of

abuse is either occurring or is potentially possible. Until it is removed by rules on how references to standards are to be made in marketing operations, and until the particular virtue of the standard is defined and clearly stated whenever the standard is referenced, then there is no chance that controversial standards like that of PL/I can work through the present process.

Summary

We suggest that a USA Standards Institute committee and/or a committee of the National Bureau of Standards take up the question of how references to the standard should be made, and how the purpose of standards should be described. As soon as this can be resolved, and it is not a difficult problem, we are sure that



The Royal Warrant

Rules to be observed by holders of the Royal Warrant to Trademark

Published by order of the Lord Chamberlain

This is the cover of the book that sets forth the rules for the use of the royal coat of arms.

most of the reasons why users want standards will suddenly become practical.



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Disadvantaged Train to Use Computers

BOSTON — Discussion during a panel, "Computers and the Underprivileged," at the Spring Joint Computer Conference indicated that successful pilot projects exist for training the undereducated and disadvantaged as computer operators. But the panel also indicated that there are no plans and no money

Resistors, Aided by Computers, Broaden Scope of Ghetto Students

BOSTON — "A computer is the best toy a kid can have," declared Barry Klein during the panel on "Computers and the Underprivileged."

Klein is a high school student and a member of the Resistors, a group of students who have computer equipment set up in a barn in Hopewell, N.J.

Most of the panel discussion concerned getting jobs for the underprivileged in the computer

industry, but Klein said, "You have to start earlier than with jobs." He said that the Resistors had worked with ghetto high school students and had considerable success in getting them interested. He said that the Resistors set up some equipment in a high school room and always had people coming in to play with it.

"Computers are a toy that can expand the environment of ghetto people," he concluded.

to expand these pilot projects to handle larger numbers of people.

Job placement is the most serious problem with all of the computer training projects. It was generally agreed that there is no hope of placing the undereducated as programmers, since companies generally require that programmers be college graduates or work their way up within the organization.

Chances for placing computer operators seem a little better, but things are not too bright even here. Large companies so far have not been willing to relax rigid restrictions even for applicants who can demonstrate that they are trained computer operators. Nearly all placements have been with smaller companies and primarily through friends of the people running the pilot project.

Placement Approaches

Another approach to placement was offered by panelist Milton Bauman, who declared, "Don't fool around with placement officers, go right to the top. The people at the top are concerned."

But the session chairman, James H. Burrows, cautioned, "You have to approach the guys at the bottom." He said that it was his experience that the people at the bottom frequently didn't accept as coworkers those people who had been placed by demands from the top.

Even going to the top doesn't always work. Paul Milstein, vice-president of Computer Personnel Development Association, reported that the association had sent letters to 50 companies listed in a *New York Times* advertisement headed "We Give a Damn," and sponsored by the Urban Coalition. Milstein said that very few of the companies responded, and even fewer offered jobs. He concluded: "We know how to train, but the trouble is placement. The government hasn't done a damn thing, and the corporations spend more on publicity than they do on training."

None of the projects described during the session was connected with a particular company. Two speakers from the U.S. Department of Labor, William Burton Lewis and Joseph Seller, spoke at length on what the department was doing to train the underprivileged. But they stressed that money was available only for on-the-job training, and not for the kind of projects discussed at the session. Lewis also conceded that the department had done very little in the computer industry.

Three pilot projects were described by panel members. Prof. John J. Donovan described a program of his at the Lowell School, a night school at MIT. His group is currently training 140 hard-core disadvantaged. The students average 25 years of age and are high school dropouts. They all, however, are interested in better jobs, as shown by their application for the course.

Allen L. Morton of Computer Personnel Development Association told of a program in a ghetto in New York in which they trained a group selected essentially off the street.

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Girls, Gimmicks, Even a Few Computers, Highlight Displays



Redcor Corp. gave out giant balloons complete with helium to children to keep them occupied as they sold daddy on Redcor's RC785.

BOSTON—With all the eurs of a country fair, the SICC exhibits entertained, enlivened, and engulfed thousands of computer people. The show proved absolutely impossible for the average computer-oriented spectator to cover with any success in one day.

The exhibits varied from high priced, professionally organized "shows" that used experienced pitch men to small booths manned, in some cases, by the company president, vice-president, and sales manager.

With all companies, however, the pressing and critical objectives were to give the company products the best coverage possible, as well as the best sales pitch possible.

If success is measured by heavy turnout, exhausted salesmen, tons of paper disseminated, and thousands of sales leads acquired, SICC was a success.

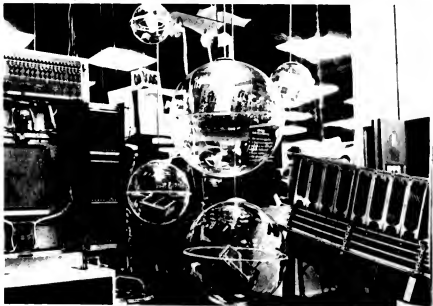
COMPUTERWORLD
Photo Feature
by Farmer



Tying on "Red Baron" Herold Velle's scarf, is Shaun McCormack of Commonwealth Computing. Commonwealth was building good will by giving free Polaroid snapshots in front of World War I airplanes outside the auditorium.



Shri Moreau of International Communications Corp. coerces a spectator into helping her to demonstrate a terminal programmed to select accessory options for a new automobile.



MIRRORS AND COMPONENTS IN GLASS CASES ADDED GLAMOR TO LOCKHEED ELECTRONICS' EXHIBIT.



A good solid whack with a large wooden mallet stops the ruggedized Honeywell DDP-516. Joseph Wigg of Bell Telephone Labs wielded the mallet to win a \$150 weather station. Demonstrator Robert Drew (in white), after calling in the Honeywell engineers, announced the problem wasn't in the computer at all, but in a faulty "gimmick" switch he was using to momentarily stop the computer as a gag.



Barry Z. deFerranti of ICL checks Act's record of IBM marching songs with Jeannette Radley and Charles Lecht of Act.



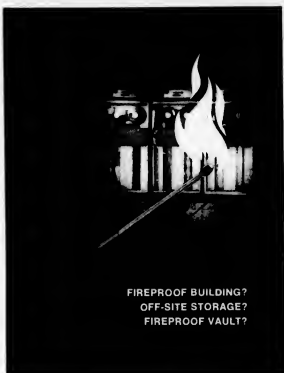
Computer Sharing, Inc. gives its terminal a little sex appeal.



Scientific Data Systems conducts an input through output time-sharing demonstration on the SDS Sigma 7 computer.



Clevite's 4800 electronic printer draws capacity crowd to Clevite's 10 ft by 10 ft booth.



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New Products at SJCC

Time-Sharing System Displayed

BOSTON - A new time-sharing system was demonstrated at the SJCC by Mini-Comp, Inc., of Natick, Mass.

The MC232 offers the user up to 32 terminals including I/O typewriters, teletypewriters, numeric keyboard displays, plotters, and calculators.

Hardware is all OEM. The company supplies the software which includes Mini-Tok, a simple-looking mathematical language designed for engineering, science, education, and commercial applications, among others.

Up to seven terminals can be operated simultaneously in programming mode, while any other terminals in the system can be

used as calculators at the same time. Each of the seven programs can be up to 250 instructions in length.

The basic system, including 16K of core and eight teletypewriter terminals, is priced at \$45,000. The company also offers additional core and mass storage. Basic and Fortran are under development for near-term release, the company said. Delivery is stated to be 90-120 days.

New Processor

BOSTON - A special-purpose peripheral processor, designed to handle Fast Fourier Transforms, was announced by Raytheon.

The Array Transform Processor is being marketed to service the company's 703 and 706 processing units. It is claimed to handle these repetitive mathematical functions more than 80 times as fast as 703 and 706 programs.

Besides Fast Fourier Transform, the new processor is said to have direct control for processing convolution integral, autocorrelation, cross-correlation, and averaging. Utility processes for handling arrays and vectors are also included, the company says.

The unit is designed to serve such applications as seismic prospecting, vibration testing, structural and wind tunnel testing,



Univac 1710 Verifying Interpreting Punch

biomedical research, and speech analysis.

A system with 16K words of core, 6.4 million bits of fixed-

head disk storage, and two IBM-compatible 75 ips magnetic tape drives is priced at \$130,000.

1710 VIP Shown

BOSTON - Univac's entry in the 80-column card market, the 1710 Verifying Interpreting Punch, has a buffer into which data is entered and verified. The card is not actually punched until verification (if desired) has been completed.

The unit was displayed as an OEM product but is also in the hands of the computer field-marketing group.

It can be used for standard keyboard (off-line) work and can be equipped with an optional feature to function as an on-line punch or reader-punch.

The memory has a standard feature which allows backspacing if the operator senses an error. The VIP, announced to the field staff some time ago, was displayed for the first time at the SJCC.

The basic unit costs \$7,200 without the on-line option and without interpreting capability. It is said to be deliverable in 90-120 days.

MCR 8000 Surveyed

BOSTON - Potter Instrument Co. used the SJCC to conduct a market survey on a prototype magnetic character-recognition device designed to read 300 cards (packed at up to nine times the density of standard 80-column punched cards) per minute.

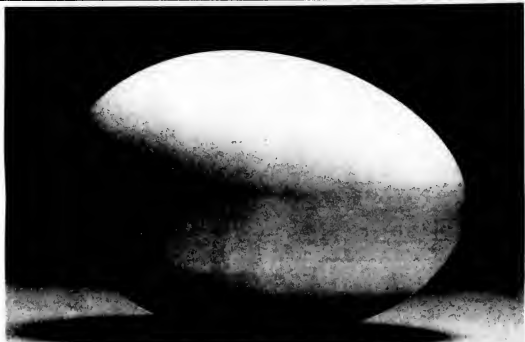
The device, designated the MCR 8000, is not in production, and none has been scheduled, according to a Potter representative. He could not talk price or delivery.

The new Potter Magnetic Character set, readable by both man and machine, is based on a barcode with an associated alphanumeric character. Cards of key-punch size will accommodate up to nine times as much information as conventional punched cards.

Compared to the magnetic ink character recognition (MICR) techniques, the system offers lower costs, a much larger number of characters, and far greater readability, he said.



Three characters from Potter's new character set.



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If you are a career professional in data processing, and you do not regard your present position as necessarily permanent, you can use the Registry to expose your qualifications—not your name—to a wide variety of computer-oriented companies who need people with your particular skills. You can do this at no expense and in complete confidence—without interfering with your present position.

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All information **except your name and address and current employer** will be entered in the Computer Personnel **Registry**. Only the professional personnel of CPC will know the names which match each set of qualifications in the **Registry**.

Employers who subscribe to the **Registry** will have access to its information in filling their needs for data processing personnel. If your qualifications are selected by an employer, a CPC staff member will personally telephone you and identify the employer who is interested.

If—and only if—you authorize it, your name and address will be released, and you will be contacted directly by the employer. All costs of the **Registry** are borne by our subscribing employers. These employers agree in advance to pay interviewing expenses and reasonable relocation costs.

There is no fee charged to you for your participation in the **Registry**, and, to repeat, at no time will your name, address, and current employer be released without your permission. You are under no obligation to enter into discussion of a position that may be available to you, and you may withdraw from the Registry at any time simply by notifying CPC.

(Shaded areas denote confidential information.)

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		Present Salary	Required Salary
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		9-11K	9-11K
Industry Pref		11-12K	11-12K
		13-15K	13-15K
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		over 20K	over 20K
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Gavin Cites Role of Computers In Solution of Social Problems

By Patricia Coffey

BOSTON — "If I were to categorize in a few words the era in which we live, I would say it is an age of communications," said retired Gen. James M. Gavin in his keynote speech at the Spring Joint Computer Conference. Gavin, now chairman of Arthur D. Little, Inc., used the term to include not only the spoken and written word, but the management of information in general. "The key to understanding," he said, "can be made available by the computer community." "Those in the computer field realize the need for an organization in association with the management of information," he said.

Economic Impact Stressed

He cited the role of the computer as being more important than any other aspect of our economic situation.

"At first," he said, "it may seem somewhat ridiculous to suggest that a computer could seriously affect social problems. However, it becomes clear that the human action which is needed to attack these problems must be preceded by information which defines the problem in a quantitative way."

Gavin feels it imperative that those in the computer profession develop adequate information on social needs, and that they recognize clearly the complex interdependence between what

they can do and what the needs are within the social system.

Computers Only a Tool

"Computers are only a single tool we are going to need to solve social problems," said Gavin. He said that data must be incorporated in some form of model which accounts for human needs and attitudes which, he said, we must allow for better than we do now.

"A primary requirement for developing such models is skilled analysts dedicated to work on social problems. They will be needed in vast numbers," he said.

Gavin stressed participation on

the part of those who will be affected by solutions developed by computer professionals and professionals other than computer experts.

"The problem of matching human needs to available resources is the big social problem for the Seventies, and the computer community can play a very large role in solving it," he said.

He cited the challenge and said that opportunities are limitless.

"To achieve them, we must recognize that to program machines to do the necessary social jobs, we must thoroughly understand the context of the problems," Gavin said.



Gen. James M. Gavin delivers keynote speech. (CW Photo by Farmer)

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Time-shared input cuts data preparation costs 50%.

Now you can cut your computer input costs in half. This new innovation in data preparation techniques gives you two money-saving advantages over conventional keypunch or one-key-board/one-magnetic-tape-per-operator systems: (1) The LC-720 employs a computer time-shared input; (2) It is the only system available that provides data output directly on IBM/360-compatible magnetic disc.

By time-sharing the data from 60 or more keyboard operators simultaneously, significant savings in data station costs of as much as 50% can be achieved. Costs drop to as low as \$4300 per data station for a typical 60 station system. For large data preparation installations, the time-shared input is the only economical way to go.

Data entered into the LC-720 is processed by a small digital computer and stored on an IBM/

360-compatible magnetic disc that provides the advantages of bulk storage and high speed random access of data. The problems associated with punched card handling or the mounting, pooling, merging and unmounting of magnetic tape reels are eliminated. All data is conveniently and economically stored in an IBM 1316 disc pack for direct high speed input to your modern data processing system. Naturally, an IBM/360-compatible magnetic tape is also provided with the system as standard equipment.

The LC-720 KeyDisc System also offers for the first time, data verification requiring one input pass only through the system, in addition to the normal technique of verification requiring two different operators. Record size is infinitely variable by each operator from 1 to 120 characters long and the system stores a large library of 30 or more different format control programs, all available simultaneously to any and all operators.

Drafting Machine Stores Program, Reads Ahead

SOUTH WINDSOR, Conn. — A stored-program automatic drafting machine to cost under \$60,000 was shown at the Spring Joint Computer Conference by the Gerber Scientific Instrument Co.

The system features software routines which are said to eliminate mechanically-switched functions, such as scaling, axis interchange, offset, and input code. Any two of five linear axes can be recognized.

The control, designated the 1200, has a look-ahead capability, which is said to read information up to 50 data blocks ahead of that which is being drawn. This, the company says, allows the incorporation of known table and device characteristics to calculate optimum velocities and acceleration/deceleration values.

The standard configuration includes a 400-character/sec. bi-directional tape reader for input, and an ASR-33 Teletype for operator/drafting system communication. The processor has a capacity of 8K 16-bit words.

I/O devices such as magnetic tape, paper tape punch, and telephone data net are optional.

Gerber has offices here at 83 Gerber Road.



LC-720 KeyDisc System

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Portrait of Some Pioneers



Gathered at the Spring Joint Computer Conference for an informal reunion, they were as self-conscious as kindergarten students as they lined up for a group picture. Their shyness belied their important roles in the computer field and the significance of the gathering. These were among the Univac Pioneers, people who had helped to program Univac 1 before

1955. They were living proof that not everyone in the business is under 30, that the field is now old enough to really talk about the old days. Left to right are B. Halbrook, V. Della Valle, G. Archer, A. Tonik, L. Elbert, G. Hopper, T. Jones, J. Bartik, B. Holberton, D. Woltman, F. Delaney, M. Koss, B. Finley, D. Miner, and A. Llana.



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SJCC Sessions Called 'Uninteresting, Poorly Presented'

By Peter L. Briggs
CW Staff Writer

BOSTON — One SJCC speaker, opening a morning session, noted that the panel members had been given pointers at a group breakfast, on how to give talks. He then went on to say, "I plan to violate all of those rules that were outlined this morning." He did, and presented one

of the worst talks some members of the audience could remember hearing.

Many papers were presented in the software area, a contrast to the paucity of exhibits for software. But people who attended some of these sessions told *Computerworld* they felt that those presenting the papers were neither interested in presenting

them nor in attempting to communicate their ideas to the audience.

Some Exceptions

One noticeable session that broke the pattern was that presented on time-sharing systems. The speakers were uniformly well spoken, and expressed obvious interest in explaining what

they had done and why.

Perhaps the worst offender, according to some of the large number of people who left during the presentation, was a session carrying the propitious title "Software." By the end of the first half-hour, over half of the large audience had left.

In explaining their reactions to *Computerworld*, several members of the audience pointed out that the speaker was "obviously uninterested in the paper himself." Though many of their comments could not be reproduced here, the consensus ran, "Why did he bother to stand up there on the stage when he couldn't read the paper properly, was totally unfamiliar with a microphone, and appeared to be totally disinterested in both the audience and his own paper?"

A Little Training

Lack of familiarity with a microphone was certainly understandable, if not excusable. It was suggested by some people that the first technical session

offered (and required for all speakers) be one on the general principles of speaking to a live audience. "Perhaps," one person noted, "a professional speaker or teacher could spend a brief time trying to point out the basic principles involved, and the use of a microphone, a podium, and a written text." Several speakers in this industry are quite able to discuss technical subjects and still retain both the attention and understanding of their audience.

"It is certainly not reasonable," according to one member of the audience, "to expect professional speakers, but it does seem reasonable that the speaker should be expected to take an interest in the paper and the audience."

The avowed purpose of the technical sessions was to promote communication and understanding between various disciplines of the data processing community. It seems unlikely that such a purpose could be fulfilled by the practices demonstrated this year.

Virtual-Memory Paging System Paper Brings Praise From Session Audience

BOSTON — A paper on a virtual-memory paging system developed at Oregon State University for the CDC 3300 was pre-

sented at the opening of the Time-Sharing session Thursday morning. It was one of the most interesting papers given, according to many who attended.

The paper, presented by James W. Meeker and others, dealt with the growth of the system, the changes which this growth entailed, and the reasons for developing these specific changes. Several classes of problems were discussed, including file management, the scheduling algorithm, and the paging technique needed to properly utilize the system and support a maximum number of users. The development of a "debugging" algorithm (one which assists the master scheduler in clearing up excessively large queues) permits the system to schedule "quantas" of processor time based on the type of utilization required by the individual program while it is actually in operation.

The goal of this approach is to

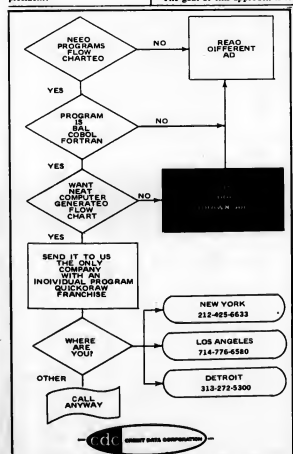
permit programs heavily engaged in file processing at a particular time to make maximum use of the files, while permitting process-bound programs to gain extra quanta without overall loss in response or scope.

Other papers at the session dealt with "Virtual Memory Management in a Paging Environment" and an "Operational Analysis of a Remote Console System."

\$20,000 RMS From BAS Provides User Control

BOSTON — A Resource Management System (RMS) was announced by Brandon Applied Systems, Inc. at the SJCC. The new system is designed to aid in the planning, scheduling, and management of both personnel and equipment in data processing installations. The package produced several budget estimates and reports and is divided into two packages (one for hardware and one for personnel) and sells for \$20,000 (combined).

The system involves an investment of about \$300,000, according to Dick Brandon, company president.



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Auditor III Saves User's Core

BURLINGTON, Mass. — A new package specifically designed to provide input-data error-checking and audit control has been released by Matrix Corp. The package, known as Auditor III, provides several features specifically designed to simplify the process of data editing including: English-type mnemonics for logical description of the edit tests, simple control statements for file description, and user-specified error notes for input errors.

The Auditor III program runs on any S/360 under either DOS or OS, and is actually a limited compiler. The source statements are used to control the modification of pre-coded routines, which the company claims enable the system to run with high efficiency.

A significant area for savings using Auditor III would be in the amount of core saved for smaller systems, according to

James E. Birdsell, company vice-president. The extra coding required to produce input editing for regular processing programs can be entirely removed and placed in the Auditor III run, he pointed out.

The package, according to Birdsell, was designed for CPA

and auditing applications requiring extreme ease and high speed for data verification.

Auditor III sells for \$2,000, which includes one year's maintenance, and is available through the company's offices here at Northwest Industrial Park, Second Ave.

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ATLANTA — Stockholder accounting can now be performed with a new system designed for either companies or banks that act as service bureaus, according to Fred E. Berman, vice-president of American Software and Computer Co.

The package is written in Cobol for the S/360 and the RCA Spectra-70 computers, Berman said. "It incorporates all the necessary computer programming and documentation to provide a completely automated stockholder records accounting system." This includes maintaining certificate records, processing dividend checks, stock dividends, and proxies.

Many reports with differing frequencies are available for management, and a complete analysis of any phase of stockholder records is available at any time, he said. The package sells for \$19,000 and includes installation, maintenance, and complete documentation.

Early purchasers of the package include the First Union National Bank of Charlotte, N.C., and the National Bank of Tulsa, Okla., Berman said.

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May 28, 1969

Page 23

SDS, Xerox Merger Approved

LOS ANGELES — Stockholders of Scientific Data Systems Inc. and Xerox Corp. have approved the merger of SDS and Xerox for stock valued at over \$910 million.

The merger still needs confirmation from the Internal Revenue Service that the transaction will be tax-free.

Terms of the merger call for Xerox to issue three post-split common shares for each two of Scientific Data's 6,641,119 common shares.

Xerox shareholders also approved a three-for-one split of the company's common stock and an increase in the company's authorized common stock to 90 million shares from 30 million. The stock split is payable June 17.

UCC Computer Operations Set New 3-Month Record

DALLAS — University Computing Co. has reported that revenues and net income from its computer industry operations for the first quarter of 1969 set new records for the three-month period.

UCC net income from computer operations amounted to \$1,538,000 on revenues of \$22,065,000, after elimination of intercompany transactions and minority interests in publicly held subsidiaries.

In addition, UCC's equity in the earnings of its subsidiary, UCC Financial Corp., amounted to \$1,532,000. Total net income, therefore, was \$3,070,000, equal to 54 cents per share on 5,664,000 average shares outstanding.

For comparison, net income for the 1968 first quarter, restated to reflect companies ac-

quired last year on a pooling-of-interest basis, amounted to \$1,077,000 on restated revenues of \$12,836,000, or 21 cents per share on a restated average of 5,117,000 shares.

During the first quarter, UCC reported acquisition of Data Corp. of Falls Church, Va., with its product line of remote-access conversational mode computer terminals.

Fabco, an extension of computer utility services beyond the time-sharing services of other companies, first became available to UCC customers after a two-year, \$1.9 million development effort.

Also during the first quarter, new computing centers were established in San Francisco and El Paso, and the company acquired Datamec, Inc., a data processing service firm in Seattle, Wash.

Independent Software Companies Seen Getting \$3 Billion of Market in 1975

ST. LOUIS — Computer software expenditures in the United States will exceed \$21 billion by 1975, an increase of 300% over current levels, it has been predicted by William R. Hoover, executive vice-president of Computer Sciences Corp.

Furthermore, Hoover said, independent software companies will hold a \$3 billion share of the 1975 market. The independents, which provide software to both manufacturers and users of computers, are currently doing some \$800 million of business, he noted.

Hoover addressed his remarks to a panel session on "New Directions in the Computer Industry" at the 22nd annual conference of the Financial Analysts Federation in St. Louis.

Hoover is a prominent figure in data processing management. As executive vice-president of CSC, he directs the operations of one of the world's largest computer software and information sciences companies.

The growing number of computer installations is only one factor in the dynamic upward trend of software expenditures, Hoover explained. Equally if not more important is the rapidly increasing variety of applications

the machine is being put to, and the complexity of many of these applications.

Since the introduction of the third-generation computer, "software has been clearly established as the leading technical force in the advancement of computer technology," Hoover said.

This relationship will become even more accentuated in the future, Hoover asserted, and will benefit the independent firms capable of bringing a broad range of disciplines to bear on the solution of software problems.

Proprietary products and services are another rapidly expanding source of revenues for the independent companies, Hoover told the financial analysts. These items also have high profit potential because development costs can be recovered through volume sales, he noted.

Hoover estimated that the market for the independent companies' software packages will grow from less than \$50 million this year to \$350 million in 1975.

The Computer Sciences executive also commented on the expected announcement that IBM

will soon offer separate pricing on its software packages. The change in policy, he said, will have "a positive effect on the growth of software firms that have already established a product line, and have the substantial technical and marketing resources necessary to participate in this field."

But an even larger and faster-growing area than packages is the field of network time-sharing, Hoover stated. Service revenues from remote computing networks are expected to soar from less than \$200 million in 1969 to more than \$2 billion in 1975.

Such on-line information services are expected to make up the lion's share of the 1975 remote computing market, with revenues estimated at \$1.5 billion. In contrast, these services account for only a few million dollars today.

Software will continue to be the pacing factor in the development of these proprietary services, Hoover said. Consequently, the independent firms with the technical skills and the capital resources required to compete in this field will play a leading role in its expansion.

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Proven Equities Take Leadership Over Unseasoned, More Speculative Issues

By A.B. Williams
CW Staff Writer

It was as if the market for computer stocks knew what was going on in Boston at the SJCC. The Software and Services group might have been reacting to what was considered by many to

be a nearly unbroken series of poorly presented dissertations. The group recorded the only index change of more than 1% during the week ended May 16.

s Trading Index

[illegible]

Year	United States (%)	Soviet Union (%)
1960	65	85
1965	75	80
1970	60	90
1975	70	85
1980	75	90

Source: 100 as of 3/1/80

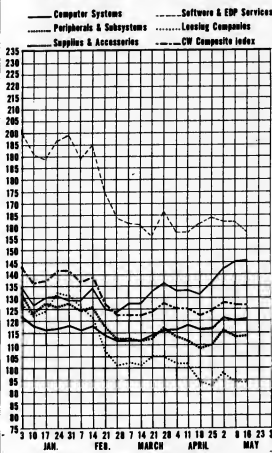
Computers: What's their future?

Odd-Lot Customers' Purchases and Sales

	Purchases	Sales
Ampex	8,792	23,661
Burroughs	3,225	1,425
Control Data	4,693	17,785
Gen'l Electric	6,640	29,814
Honeywell	2,609	4,385
IBM	26,530	32,342
Minn. Mining & Mfg.	4,512	5,296
RCA	11,843	27,280
Raytheon	3,008	2,726
Sperry Rand	8,756	32,406
Xerox	13,930	5,493

Week Ended May 2, 1961

Computer Stocks Trading Index



BASE FOR EACH TRADING INDEX: 100 as of 2/1/90

Computers: What's their future?

The special Review and Forecast issue of *EDP Industry Report*, just published, contains a valuable analysis of the explosive computer industry at a time when there are significant transitions occurring in the EDP market.

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COMPUTER STOCKS: TRADING SUMMARY

WEEK ENDED MAY 10, 1959

[illegible]

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	NAME	PRICE	PRICE	YTD	CHG		
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2	71-1 1/2	1/2	ALPHAPROPHANE	1	3/4-1.15		
3	80-23 1/2	4 1/2	AMPER CORP	1	5/4-1.75		
4	80-17 1/2	1/2	AMERICAN F&H	1	1/2-1.00		
5	71-17 1/2	1/2	BUNER-BUNO	1	1/4-1.15		
6	80-23 1/2	1/2	CONTRACTORS	1	1/2-1.45		
7	80-23 1/2	1/2	COMPTON	1	1/2-1.45		
8	80-23 1/2	1/2	DATA PRODUCTS CORP	1	1/2-1.45		
9	80-23 1/2	1/2	DATA PRODUCTS CORP	1	1/2-1.45		
10	80-23 1/2	1/2	ELECTRON NOVICES	1	1/2-1.45		
11	80-23 1/2	1/2	FARMER	1	1/2-1.45		
12	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
13	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
14	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
15	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
16	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
17	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
18	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
19	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
20	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
21	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
22	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
23	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
24	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
25	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
26	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
27	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
28	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
29	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
30	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
31	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
32	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
33	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
34	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
35	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
36	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
37	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
38	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
39	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
40	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
41	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
42	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
43	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
44	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
45	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
46	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
47	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
48	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
49	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
50	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
51	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
52	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
53	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
54	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
55	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
56	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
57	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
58	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
59	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
60	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
61	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
62	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
63	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
64	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
65	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
66	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
67	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
68	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
69	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
70	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
71	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
72	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
73	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
74	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
75	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
76	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
77	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
78	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
79	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
80	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
81	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
82	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
83	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
84	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
85	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
86	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
87	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
88	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
89	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
90	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
91	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
92	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
93	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
94	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
95	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
96	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
97	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
98	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
99	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		
100	80-23 1/2	1/2	FARMINGTON NRY	1	1/2-1.45		

1969		CLOSING		SUPPLIES & ACCESSORIES		WEEK		WEEK	
EXCH	RANGE	PRICE		NET		CHANGE		CHANGE	
0	47 - 32	38	1/2	ADONE VISIBLE		+ 1 1/2		4-85	
N	28 - 17	17		ADAMS-MILLIS CORP		+ 1/8		-1/8	
0	47 - 32	38	1/2	ADAMS-MILLIS FORM		+ 1/8		-1/8	
A	19 - 10	10		BARRY WRIGHT		+ 1 3/4		-6-43	
0	47 - 32	38	1/2	BARRY WRIGHT FORM		+ 1/8		-1/8	
N	28 - 17	17		FINNIS RUB. FORMS		+ 1/4		+6-53	
0	47 - 32	38	1/2	FINNIS RUB. FORMS		+ 1/4		+6-53	
N	112 - 94	111		3M COMPANY		+ 2 3/4		8-54	
0	47 - 32	38	1/2	3M RUB. FORMS		+ 1 3/4		-1-18	
0	47 - 32	38	1/2	NASHUA CORP.		+ 1/2		-1-18	
0	47 - 32	38	1/2	NETHOLDS & NETHOLD		+ 1/2		-1-18	
N	28 - 17	17		STANDARD REGISTER		+ 1/2		-1-18	
0	47 - 32	38	1/2	WARD		+ 3/4		+6-17	
N	112 - 94	111		WARD RUB. MAGNETICS		+ 1 1/2		-1-18	
0	34 - 28	28	1/2	WALLACE SW FORMS		+ 1/2		-1-53	

1966 CLOSING		NEW		NEW	
DATE	PRICE	PRICE	CHANGE	PRICE	CHANGE
0	14- 7	18 1/4	ADVANCED COMP TECH	1 3/4	88-29
0	38- 31	34	ADP DATA RES	1	89-19
0	38- 31	34	ADP DATA RES	1	89-19
A	23- 63	65 1/2	AUTOMATIC DATA PRC	1 1/2	87-25
0	17- 18	13 1/2	BRANDS APPL SYS	1 1/4	89-20
0	17- 18	13 1/2	BRANDS APPL SYS	1 1/4	89-20
0	14- 11	11	COMPUTER DIVISION	1	89-23
0	14- 11	11	COMPUTER DIVISION	1	89-23
0	28- 39	39	COMPUTER SCIENCES	3/4	89-24
0	28- 39	39	COMPUTER SCIENCES	3/4	89-24
0	13- 13	13	DATATION SERVICE	1/2	89-25
0	13- 13	13	DATATION SERVICE	1/2	89-25
0	17- 17	17	DELTA	3/4	89-26
0	17- 17	17	DELTA	3/4	89-26
0	38- 38	38	INFORMATICS	1 1/2	89-28
0	38- 38	38	INFORMATICS	1 1/2	89-28
0	18- 18	18	NET COM ANALYSTS	1	89-28
0	18- 18	18	NET COM ANALYSTS	1	89-28
0	17- 17	17	PERFORMANCE SYS	3/4	89-29
0	17- 17	17	PERFORMANCE SYS	3/4	89-29
0	33- 15	17	STRATEGIC SFT	1	89-33
0	33- 15	17	STRATEGIC SFT	1	89-33
0	18- 18	18	TRF COM INC	1/2	89-34
0	18- 18	18	TRF COM INC	1/2	89-34
0	38- 39	38	USA SYSTEMS	1 1/4	89-35
0	38- 39	38	USA SYSTEMS	1 1/4	89-35
0	18- 18	18	WESTERN	1/2	89-36

[illegible]

Earnings Report

SYSTEMS CAPITAL CORP.

Year Ended Dec. 31
 1968 1967
 Revenue \$4,956,500 \$1,709,000
 Earnings \$30,000 \$26,000
 Sfr Earnings .40 .35

MARSHALL INDUSTRIES

9 Months Ended Feb. 28
 1968 1967
 Revenue \$16,839,200 \$16,420,800
 Earnings \$3,308 7,540
 Sfr Earnings .64 .46
 a - Re-stated to reflect net operating loss carry forward of acquired companies.

SYSTEMS ASSOCIATES, INC.

6 Months Ended Dec. 31
 1968 1967
 Revenue \$427,280 \$267,044
 Earnings 31,308 7,540
 Sfr Earnings .42 .35

NORTH AMERICAN DATA SYSTEMS, INC.

Year Ended Dec. 31
 1968 1967
 Revenue \$11,152 \$10,813
 Earnings 255,483 156,408
 Sfr Earnings .44 .45

INTERNATIONAL SYSTEMS ASSOCIATES, INC.

Year Ended Jan. 31
 1968 1967
 Revenue \$993,678 \$929,843
 Earnings 95,775 46,041
 Sfr Earnings .13 .05

PLANNING RESEARCH CORP.

9 Months Ended Dec. 31
 1968 1967
 Revenue \$36,243,836 \$33,229,243
 Earnings 1,864,567 1,591,228
 Sfr Earnings .42 c.36
 3 Months Ended Mar. 31
 Revenue \$1,376,754 \$1,242,006
 Earnings 673,805 600,634
 Sfr Earnings .15 c.14
 a - Re-stated to reflect acquisitions; b - Based on income before special credit; c - Adjusted to reflect 100% stock dividend in Jan. 1969.

CALIFORNIA COMPUTER PRODUCTS, INC.

Year Ended Mar. 31
 1968 1967
 Revenue \$12,859,541 \$11,600,904
 Earnings 731,341 771,097
 Sfr Earnings .23 .23
 a - Re-stated to reflect consolidation of returns from Airtron, Inc. as acquired company.

HARRIS INTERTYPE CORP.

9 Months Ended Mar. 31
 1968 1967
 Revenue \$240,474,000 \$207,756,000
 Earnings 29,196,000 22,528,000
 Sfr Earnings 2.25 2.15

HF IMAGE SYSTEMS, INC.

9 Months Ended Dec. 31
 1968 1967
 Revenue \$85,253,000 \$75,575,000
 Earnings 10,136,000 8,334,000
 Sfr Earnings .79 .64
 a - Operating results are restated to include RF Communications, Inc. as a pooling of interests benefit.

HF IMAGE SYSTEMS, INC.

9 Months Ended Dec. 31
 1968 1967
 Revenue \$85,253,000 \$75,575,000
 Earnings 10,136,000 8,334,000
 Sfr Earnings .79 .64
 a - Company began operation April 1, 1966

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DATA POWER, INC. 711 Third Ave., New York, N.Y., a company engaged in the operation of DP service bureaus through the establishment of information-processing centers, limited by telephone lines and using standard computer programs, filed to register 140,000 shares of common stock. Proceeds, at 86¢ per share, intended for the initial rental of a computer; for acquisition or rent of remote terminal units, multiplexers, telecommunication lines, and other peripheral computer equipment; for selection, purchase, modification, and marketing of computer software programs; and for the sale and marketing of computer software programs. The underwriter is C. H. Hamburg & Co., Inc., 11 Broadway, Room 1014, New York, N.Y.

AUTOMATED SERVICES, INC. 1560 N.E. 223rd St., Fairview, Ore. 97024, a company engaged in computer testing, data processing and software, and EDP education and training, filed to register 214,000 common stock purchase warrants and 214,000 shares of common stock. They will be offered in units of one share and one warrant. Proceeds, at \$1.1 per unit maximum, intended to discharge bank loans, and to repay loans from officers. The underwriters are E.F. Hines & Co., Inc., 720 S.W. Washington St., Portland, Ore., and Constantine & Co., Inc., 1411 Fourth Ave., Seattle, Wash.

DIGITAL TECHNOLOGY CORP.

135 New York Ave., Halesite, N.Y.

11743, a company engaged in engineering, design, and development of commercial electronic devices, systems, limited to register 200,000 shares of common stock. Proceeds, at 64¢ per share, intended to complete the development of its systems and devices, to prepare for production, to finance market research and related marketing activities, to further develop and complete new products, and to say staff salaries. The underwriter is Dunhill Securities Corp., 21 West St., New York, N.Y. 10006.

SPC COMPUTER, INC., 647 Franklin Ave., Garden City, N.Y. 11530, a company engaged in providing a variety of computerized DP and related technical services, filed to register 150,000 shares of common stock. Proceeds, at 66¢ per share, intended for development of proprietary software and for working capital. No underwriter is involved.

COMPERIPHERALS, INC.

437 Madison Ave., New York, N.Y. 10022, a company engaged in the manufacture and continuing development of electronic source data collection equipment, filed to register 175,000 shares of common stock. Proceeds, at \$1.3 per share maximum, intended to acquire distribution rights for the import and distribution of the U.S. of the Romete line of products by Remco Vickers Ltd., London, England. The underwriter is Anderson & Co., 140 Broadway, New York, N.Y.

IAC COMPUTER SYSTEMS, INC.

270 Newton Road, Plainville, N.Y. 11803, a company engaged in providing computer consulting services to business concerns, filed to register 100,000 shares of common stock. Proceeds, at \$2.50 per share, intended for further development and testing of its systems, establishment of a sales department, purchase of additional peripheral computer programming equipment, and related purposes. No underwriter is involved.

COMPUTER TECHNOLOGY, INC.

5401 One Orchard Road, Suite 800E, a company which provides a wide range of computer related services to business, industry, and governmental agencies, filed to register an offering to TV stockholders. The offering will be for the exchange of common stock purchase warrants of Computer Technology, Inc. for up to 1,500,000 shares of Aerospace common stock. The underwriter is Latham Brothers, 1 William St., New York, N.Y.

TAKTRONICS, INC.

10 Pine St., New York, N.Y. 10005, a company planning to engage in computerized tax return preparation and EDP for business concerns, filed to register 200,000 shares of common stock. Proceeds, at 85¢ per share, intended for the establishment of a computer center, tax return office, and for the purchase of the underwriter is Grants Securities Corp., 500 Fifth Ave., New York, N.Y.

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